REMARKS

The Official Action dated May 12, 2009 has been carefully considered. It is believed that the present Request for Reconsideration demonstrates the patentability of pending claims 1, 3, 4, 6, 7, 10, 13-16, 18 and 19 and places this application in condition for allowance. Reconsideration is respectfully requested.

Claims 1, 3, 4, 10, 14, 15 and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Iwasaki et al U.S. Patent No. 4,769,442 in view of *Water Encyclopedia*, pages 350-352. The Examiner asserted that Iwasaki et al disclose recycling the used acetone after distillation, which means that acetone is being purified, and Iwasaki et al also disclose purifying the acetone by passing it through a column. The Examiner also asserted that passing solutions over activated carbon for removal of organic impurities is well known in the art as disclosed by *Water Encyclopedia*, using activated carbon to remove organic impurities such as herbicides and pesticides. The Examiner indicated that dimethylamine is an herbicide and therefore it would have been obvious to have used activated carbon on Iwasaki et al's column since organic byproducts are expected to be eliminated from the solvent in order to purify the latter.

This rejection is traversed and reconsideration is respectfully requested. Applicants submit that the combination of Iwasaki et al with *Water Encyclopedia* does not render the presently claimed processes for producing a poly(arylene sulfide) obvious.

More particularly, the process of claim 1 reduces the content of methylamine which can accumulate in a recycled organic solvent (B) used in a washing step in the production of poly(arylene sulfide) (PAS). As a result, the organic solvent (B) can be recycled for use without adversely effecting the properties of the PAS. Specifically, it has been determined that when a

washing solvent such as acetone is repeatedly used in the washing step, i.e., by recycling the solvent, routine distillation does not sufficiently remove minute amounts of impurities such as methylamine that adversely affect the quality and physical properties of the formed PAS. Particularly, when the washing solvent is repeatedly recovered for recycle and reuse in the washing step, the PAS is undesirably colored, i.e., yellowed, and/or the melt viscosity of the PAS is lowered. Additionally, although it is known to treat formed PAS with an aqueous solution or organic solvent solution of an acid or a salt of a weak alkali and a strong acid, for example, ammonium chloride, in a post treatment step in order to raise the crystallization temperature, Tmc (also referred to as "melt crystallization temperature"), the Tmc-raising effect of the acid or salt is reduced when the washing solvent is repeatedly recovered by distillation for recycle and reuse through the washing step. A lower Tmc reduces the efficiency of molding operations since, for example, the cycle of injection molding is extended.

The present inventors have extensively investigated the PAS production process which comprises heating and polymerizing a dihalo-aromatic compound and a sulfur source such as an alkali metal sulfide in an organic amide solvent, and have studied the production of alkaline compounds such as methylamine which are secondarily produced, presumably in the decomposition of the organic amide solvent. It has been found that when this alkaline compound is contained in a washing solvent, the compound is difficult to remove, even by distillation, and accumulates in the washing solvent during repeated use and recovery of the washing solvent.

Importantly, the present inventors have found that when an inorganic acid such as hydrochloric acid is added to the washing solvent recovered from the washing step, alkaline compounds such as methylamine form a salt with the inorganic acid. As the methylamine salt can then be removed by an additional distillation, the content of the alkaline compound, which

adversely affects the physical properties of the PAS, is lowered. It has also been found that the content of alkaline compounds such as methylamine can be significantly reduced in the washing solvent by contacting the distilled washing solvent with activated carbon. As a result, the inventors have shown that a washing solvent such as acetone may be recycled repeatedly (for example, at least several tens of times) while reducing or avoiding the adverse effects of impurities such as methylamine on the physical properties of the formed PAS.

Accordingly, the process of claim 1 recites, inter alia, a purification step of recovering the organic solvent (B) from the liquid washing component (C) by distillation, and thereafter purifying the recovered organic solvent (B) by i) adding an inorganic acid to the recovered organic solvent (B) and then conducting distillation again, or ii) bringing the recovered organic solvent (B) into contact with activated carbon and then conducting distillation again, to lower the content of methylamine mixed therein to be at most 3,000 ppm by weight, and a step of recycling the purified organic solvent (B) to the washing step of the poly(arylene sulfide). Thus, two distillation steps, separated by a step of adding inorganic acid or contact with activated carbon, are required in the process of claim 1.

According to claim 15, the process for producing a poly(arylene sulfide) comprises the step of washing the poly(arylene sulfide) obtained by a polymerization step in an organic amide solvent (A), with an organic solvent (B) comprising a ketone or alcohol, wherein the organic solvent (B) used in the washing step is recovered and recycled to the washing step of the poly(arylene sulfide), and, upon recycle, the content of methylamine in the organic solvent (B) from the previous washing step has been lowered to be at most 3,000 ppm by weight, to provide a poly(arylene sulfide) having a yellow index (YI) of at most 15.0.

Claim 18 is directed to a method for washing a poly(arylene sulfide) obtained by a polymerization step in an organic amide solvent (A) with an organic solvent (B) comprising a ketone or alcohol. The method comprises recovering the organic solvent (B) used in a washing step to recycle it through the washing step, wherein the content of methylamine in the recovered organic solvent (B) is lowered to be at most 3,000 ppm by weight

Iwasaki et al disclose that PAS particles resulting from polymerization are separated from a polymer slurry in a separator 2 and first washed with an organic solvent (acetone or methanol) in a washing vessel 3 and directed to a separator 4 to separate the polyarylene sulfide particles from filtrate (see the Figure). The PAS particles are then further washed with water and acetone (or methanol) in a washing machine 5 (see column 5, lines 16-25). Further, Iwasaki et al disclose that crystalline alkali chloride by-product (i.e., NaCl) is separated in separator 7 from the slurry discard from separator 2. The separated crystalline alkali chloride is then washed with acetone or methanol in a washing vessel 8, the crystalline alkali chloride E is discarded through a separator 9, and the separated acetone or methanol is preferably recycled to the separator 2 (see column 5, lines 30-37 and the Figure). Iwasaki et al disclose that the organic solvent (acetone or methanol) recovered from the liquid after solid-liquid separation, i.e., from separator 4 (see Figure), is put into a column 10 and purified for re-use (D). Solids C are discharged from the bottom of the column 10 and then discarded (see column 5, lines 33-42). Finally, Iwasaki et al describe that the organic solvent used for the washing of PAS can be used repeatedly by recovering it by distillation (see column 4, lines 22-26) and that the filtrate from the crystalline alkali chloride (from separator 7) is subjected to distillation (see column 4, lines 62-65 and the Figure).

Thus, while Iwasaki et al disclose the use of organic solvent such as acetone for washing PAS and distillation of the acetone in column 10 prior to recycle, Iwasaki et al do not teach distillation apart from column 10 and then another purification step in column 10 as asserted by the Examiner in the Official Action. That is, Iwasaki et al disclose at column 5, lines 38-42 that the organic solvent (acetone or methanol) recovered from the liquid after solid-liquid separation is put into a column 10 and purified for re-use (D) while C is discharged from the bottom of the column 10. It is evident that in the Figure of Iwasaki et al, column 10 is a distillation column which receives liquid from solid-liquid separators 4 and 7, particularly since the purified organic solvent is removed from the top of the column (at D). Iwasaki et al's reference to a column does not teach or suggest anything other than a distillation column.

Moreover, Iwasaki et al fail to recognize that alkaline compounds such as methylamine accumulate in the acetone, even when purified by distillation, and adversely effect the resulting PAS. Contrary to the Examiner's assertion that formation and removal of methylamine is inherent in Iwasaki et al's process, only formation of methylamine is inherent in Iwasaki et al's process. When a washing solvent such as acetone is repeatedly used (i.e., "recycled through") in the washing step, as taught by Iwasaki et al, the mere purification of the washing solvent by distillation does not permit sufficient removal of minute amounts of impurities such as methylamine, and the physical properties of the PAS after washing are adversely affected.

In this regard, the Examiner's attention is directed to the comparison of Referential Example 1 and Example 1 set forth in the present specification. Referential Example 1 employs simple distillation of the organic solvent (acetone) used for washing, according to the teachings of Iwasaki et al, and results in significant accumulation of methylamine impurity upon repeated recycling of the solvent. Accordingly, the Examiner's assertion that an alkaline compound such

as methylamine is inherently removed in the process of Iwasaki et al is rebutted. In Example 1, and the following examples, when aqueous hydrochloric acid is added to acetone recovered from a first distillation, and a second distillation is then conducted, the content of methylamine contained in the acetone is significantly reduced. In a specific embodiment, the methylamine content can be more effectively lowered by adjusting the pH of acetone to preferably not more than 10.0, and more preferably lower than 10.0. Iwasaki et al provide no teaching or suggestion of any additional step for removing methylamine, particularly by adding an inorganic acid to the recovered organic solvent (B) or bringing the recovered organic solvent (B) into contact with activated carbon, and then conducting distillation again, as recited in claim 1. Similarly, the processes of claims 15 and 18, requiring the content of methylamine in the recycled organic solvent (B) from the previous washing step to be at most 3,000 ppm by weight, is not inherent in the teachings of Iwasaki et al.

The Examiner's attention is also directed to a comparison of PAS of Examples 6-10 prepared according to the present invention, wherein the methylamine content in the washing organic solvent is maintained at a low level, and PAS of Comparative Example 1 prepared with washing organic solvent containing a high level of accumulated methylamine. The PAS of Comparative Example 1 exhibited a significant degree of yellowing and an undesirably reduced melt viscosity and Tmc as compared with the PAS prepared according to the claimed methods.

The deficiencies of Iwasaki et al are not resolved by *Water Encyclopedia*. Initially, Applicants note that the publication date of *Water Encyclopedia* appears to be that of the copyright notice, i.e., 2005. However, as the present application is a 371 application of PCT/JP2003/16333 filed December 23, 2003, the present application has an effective U.S. filing date at least as early as December 23, 2003, which is prior to the apparent 2005 publication date

of *Water Encyclopedia*. Accordingly, *Water Encyclopedia* is not proper prior art with respect to the present application. Moreover, even if *Water Encyclopedia* was effective prior art to the present application, it does not resolve the deficiencies in the teachings of Iwasaki et al.

That is, *Water Encyclopedia* is directed to purification of drinking water systems, not organic solvents. Moreover, *Water Encyclopedia* provides no teaching or suggestion for modifying the process of Iwasaki et al to employ a further step after the distillation process disclosed by Iwasaki et al. Similarly, *Water Encyclopedia* provides no teaching or suggestion of ketone or alcohol purification. More specifically, *Water Encyclopedia* states that many organic contaminants such as aromatic solvents, chlorinated aromatics, phenol and chlorophenols, polynuclear aromatics, pesticides and herbicides, chlorinated aliphatics, and high molecular weight hydrocarbons contained in water can be readily adsorbed by activated carbon. On the other hand, *Water Encyclopedia* further states that organic substances such as alcohols, low molecular weight ketones, acids, and aldehydes, sugars and starches, very high molecular weight or colloidal organics, and low molecular weight aliphatics are poorly adsorbed by activated carbon. *Water Encyclopedia* neither teaches nor suggests that methylamine contained in ketones or alcohols is not removable by distillation but may be selectively adsorbed and removed by activated carbon.

In determining patentability under 35 U.S.C. §103, it is necessary to determine whether there was an apparent reason to combine the known elements of the prior art in the fashion of the claims at issue, *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007). Neither Iwasaki et al nor *Water Encyclopedia* recognize that Iwasaki et al's distillation is insufficient to remove methylamine accumulating in recycled solvent. Further, neither Iwasaki et al nor *Water Encyclopedia* teach or suggest that contact with an inorganic acid or activated carbon, followed

by a second distillation step, is effective for removing such accumulated methylamine particularly to a level of at most 3000 ppm. Thus, neither Iwasaki et al nor *Water Encyclopedia* provide any apparent reason for one of ordinary skill in the art to combine their teachings along the lines of the present invention. The combination of Iwasaki et al and *Water Encyclopedia* does not therefore render the processes of claims 1, 15 or 18, or the claims dependent thereon, obvious under 35 U.S.C. §103. Accordingly, the rejection has been overcome and reconsideration is respectfully requested.

Claims 1, 3, 4, 6, 7, 10, 13, 15, 16, 18 and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Miyahara et al WO 03/048231, the Examiner relying on the English version thereof in U.S. Patent Publication No. 2005/0087215. The Examiner asserted that Miyahara et al disclose treating a washing liquid with an acid, specifically HCl, added to the solvent, referring to paragraphs [0046], [0048] and [0051]-[0054]. The Examiner also noted that Miyahara et al disclose a washing waste fluid comprising water, acid and acetone is discharged out of port B and is separated by distillation so as to recover acetone.

This rejection is traversed and reconsideration is respectfully requested. Initially, Applicants note that Miyahara et al WO 03/048231 is not proper prior art to the present application. That is, as noted above, the present application is a 371 application of PCT/JP2003/16333 filed December 23, 2003, and therefore the present application has an effective U.S. filing date of December 23, 2003. Further, the present application claims priority under 35 U.S.C. §119 of Japanese Application No. 2002-382176 filed December 27, 2002. Submitted herewith is a verified English translation of Japanese Application No. 2002-382176. As is evident from the English translation, the methods of the present claims are fully described in the Japanese Application, whereby the effective U.S. filing date of the present application is

December 27, 2002. On the other hand, Miyahara et al WO 03/048231 has a publication date of June 12, 2003, which is subsequent to the effective filing date of the present application of December 27, 2002. Miyahara et al WO 03/048231 is not entitled to its international filing date as a reference under 35 U.S.C. §102(e) since it was not published in the English language. Thus, Miyahara et al WO 03/048231 is not prior art with respect to the present application.

Moreover, the processes of the present invention are patentably distinguishable from Miyahara et al WO 03/048231 (Miyahara et al). The processes of claims 1, 15 and 18 are discussed above. Claim 19 recites a process for purifying an organic solvent used in washing, which comprises washing a poly(arylene sulfide) obtained by a polymerization step in an organic amide solvent (A) with an organic solvent (B) comprising of a ketone or alcohol, conducting sifting through a screen to separate the polymer from a liquid component (C) containing the organic solvent (B) used in the washing, recovering the organic solvent (B) from the liquid component (C) by distillation, adding an inorganic acid to the recovered organic solvent (B), and then conducting distillation again.

Miyahara et al disclose a number of embodiments for continuously cleansing PAS. In paragraph [0046] referenced by the Examiner, Miyahara et al disclose that in a second embodiment, washing waste fluid discharged out of a port B of a first washing unit comprises acetone, water and NMP as major components and a very small amount of dissolved NaCl, and the washing waste fluid can be subjected to distillation without a substantial lowering in efficiency wherein, in the distillation column, acetone, water and NMP are distilled out respectively from top parts, and a small amount of NMP containing high-boiling point matter is withdrawn as bottom residue liquid at an appropriate time from the bottom. Miyahara et al do

not teach any further step of acid contact or activated carbon contact for the distilled acetone, particularly followed by a second distillation step.

In paragraph [0048] referenced by the Examiner, Miyahara et al disclose that in a third embodiment, a third washing unit is supplied from a port C with a solution of an acid (e.g., an inorganic acid or an organic acid) in water or a solvent mixture of water as a major ingredient with a water-miscible solvent, such as alcohol, and from a port F is supplied water, respectively as washing liquids. As a result, the PPS particles supplied are treated with the acid solution and are washed with water. The washing liquid from the discharge port B is a diluted acid that can be introduced into an acid recovery section or can be discharged out of the system as it is because it is substantially harmless. Again, Miyahara et al do not teach any step of acid contact or activated carbon contact for a distilled acetone, particularly followed by a further distillation step.

In paragraphs [0051]-[0053] referenced by the Examiner, Miyahara et al disclose that in a fourth embodiment, PPS particles are successively washed with acetone supplied from the port C, water supplied from the port D, acid supplied from the port E, and water supplied from the port F. A washing waste fluid containing dissolved NaCl and NMP in addition to washing liquids including water, acetone and acid, is discharged out of the port B. Miyahara et al acknowledge that this embodiment therefore leaves a difficulty in recovering acetone and NMP. Again, Miyahara et al do not teach any further step of acid contact or activated carbon contact for distilled acetone, particularly followed by distillation.

Finally, in paragraph [0054] referenced by the Examiner, Miyahara et al disclose that in a fifth embodiment, first and second washing units are employed. In the first washing unit, acetone is supplied from the principal washing liquid supply port F, and the washed PAS

particles accompanied with NaCl are discharged out of the port G of the first washing unit and supplied to the second washing unit. In the second washing unit, the PAS particles are successively washed with water, acid and water supplied from the ports C, D (or E) and F, respectively, and discharged out of the port G, followed by drying, to provide an acid-treated particulate PAS product. A washing waste fluid comprising water, acid and acetone is discharged out of the port B of the second washing unit, and the washing waste fluid can be easily separated by distillation so as to recover acetone from the column top and discharge acidic water from the column bottom.

Importantly, almost all of the acetone used in the first washing unit is recovered as a washing waste fluid from the first washing unit, without any acid addition, so that no acid is contained in this washing waste fluid. On the other hand, almost all of the generated methylamine is contained in this washing waste fluid. If this washing waste fluid is distilled to purify the acetone, the methylamine remains in the purified acetone and, if the acetone is repeatedly used in the washing step, methylamine accumulates in the purified acetone. On the other hand, in the second washing unit, wherein the PAS particles are successively washed with water, acid and water, the only acetone therein is any small amount of acetone attached to the PAS particles from the first washing unit. The amount of acetone attached to such PAS particles is an extremely small part of the whole amount of acetone used in the first washing unit and it is diluted with acid and a large amount of washing water in the second washing unit.

Thus, Miyahara et al only teach distillation of the second washing unit waste fluid, which comprises only a small amount of acetone, acid and a large amount of washing water recovered from the second washing unit. The first unit washing waste fluid comprising most of the acetone used as a washing fluid is not distilled in the presence of acid. Therefore, methylamine

remains in and accumulates in the purified acetone of the first washing unit. Importantly, Miyahara et al do not teach acetone distillation, followed by a step of acid contact or activated carbon contact for the distilled acetone, followed by distillation, according to claims 1 and 19 or a process wherein recycled acetone for washing is purified to contain at most 3000 ppm of methylamine, according to claims 1, 15 and 18.

In the Official Action, the Examiner asserted it would have been obvious to vary the amount or strength of the acid or the number and strength of washes as necessary through routine optimization to obtain the desired results. However, since Miyahara et al employ acetone in a first washing step and acid and water in a second washing step, optimization of such steps will not result in the presently claimed processes. Particularly, Miyahara et al do not recognize that upon recycle the acetone from the first washing unit will accumulate methylamine, resulting in an inferior PAS product. In view of these deficiencies in the teachings of Miyahara et al, the processes of claims 1, 15, 18 and 19, directed to reducing methylamine in the recycled solvent, would not have been obvious to one of ordinary skill in the art, even when the washing steps of Miyahara et al are routinely optimized. Miyahara et al do not therefore render the processes of claims 1, 15, 18 or 19, or the claims dependent thereon, obvious under 35 U.S.C. §103. Accordingly, the rejection has been overcome and reconsideration is respectfully requested.

Claim 13 was rejected under 35 U.S.C. §103(a) as unpatentable over Iwasaki et al in view of Miyahara et al. The Examiner asserted it would have been obvious to dehydrate Iwasaki's mixture as disclosed by Miyahara.

This rejection is traversed and reconsideration is respectfully requested. More particularly, as noted above, Miyahara et al is not proper prior art to the present application. Moreover, Miyahara et al do not resolve the deficiencies of Iwasaki et al with respect to claim 1,

from which claim 13 depends, which are discussed in detail above. As noted, Iwasaki et al provide no teaching or suggestion of any additional step for removing methylamine from distilled acetone, particularly by adding an inorganic acid or bringing the distilled acetone into contact with activated carbon, and then conducting distillation again, as recited in claim 1. Miyahara et al similarly fail to teach or suggest any additional step for removing methylamine from distilled acetone, particularly by adding an inorganic acid or bringing distilled acetone into contact with activated carbon, and then conducting distillation again, as recited in claim 1. Thus, these references in combination similarly fail to teach or suggest the process of claim 1. Therefore, notwithstanding any teaching by Miyahara et al relating to dehydrating a polymerization mixture, Iwasaki et al in view of Miyahara et al fail to render the process of claim 1, and claim 13 dependent thereon, obvious under 35 U.S.C. §103. Accordingly, the rejection has been overcome and reconsideration is respectfully requested.

Claim 14 was rejected under 35 U.S.C. §103(a) as unpatentable over Miyahara et al in view of Iwasaki et al. The Examiner asserted it would have been obvious to have used Iwasaki's two-stage polymerization process in Miyahara et al's process.

This rejection is traversed and reconsideration is respectfully requested. More particularly, as noted above, Miyahara et al is not proper prior art to the present application. Moreover, Iwasaki et al do not resolve the deficiencies of Miyahara et al with respect to claim 1, from which claim 14 depends, which are discussed in detail above. As noted, Miyahara et al fail to teach or suggest any additional step for removing methylamine from distilled acetone, particularly by adding an inorganic acid or bringing distilled acetone into contact with activated carbon, and then conducting distillation again, as recited in claim 1. Iwasaki et al similarly provide no teaching or suggestion of any additional step for removing methylamine from

distilled acetone, particularly by adding an inorganic acid or bringing the distilled acetone into contact with activated carbon, and then conducting distillation again, as recited in claim 1. Thus, these references in combination similarly fail to teach or suggest the process of claim 1. Therefore, notwithstanding any teaching by Iwasaki et al relating to a two-stage polymerization process, Miyahara et al in view of Iwasaki et al fail to render the process of claim 1, and claim 14 dependent thereon, obvious under 35 U.S.C. §103. Accordingly, the rejection has been overcome and reconsideration is respectfully requested.

Finally, claims 1, 3, 4, 6, 7, 10, 13-16, 18 and 19 were rejected under 35 U.S.C. §103(a) as unpatentable over Miyahara et al in view of Iwasaki et al and in view of *Water Encyclopedia*. The Examiner asserted that it would have been obvious to have used Iwasaki's column with activated carbon as taught by *Water Encyclopedia* in Miyahara et al's process and to have used Miyahara et al's HCl in Iwasaki et al's process for the same purpose of washing the polymer and separating impurities so that the solvent can be reused.

This rejection is traversed and reconsideration is respectfully requested. As noted, Miyahara et al and *Water Encyclopedia* are not proper prior art. Moreover, the cited combination of references does not render the claimed processes obvious. Specifically, the deficiencies of Miyahara et al, Iwasaki et al and *Water Encyclopedia* have been discussed in detail above. Importantly, neither Iwasaki et al nor Miyahara et al recognize the methylamine content which remains in acetone after distillation and accumulates upon recycle, or its disadvantageous effects on the resulting PAS. *Water Encyclopedia* similarly provides no teaching or recognition in this regard. In the Official Action, the Examiner asserted that polymerization reactions of PAS, as well as most polymers, are well known in the art and the byproducts of the reactions are also well known. Nonetheless, the Examiner has failed to

provide any showing recognizing the occurrence of methylamine in distilled organic solvent, its significant accumulation therein after repeated recycling, and its disadvantageous effect on PAS. In the absence of any such teachings, one of ordinary skill in the art would have had no reason to conduct any further purification after the distillation taught by Iwasaki et al or Miyahara et al.

Moreover, the process of claim 1 comprises, inter alia, a purification step which includes, first, recovering the organic solvent (B) from the liquid component (C) of the washing step by distillation; second, purifying the recovered organic solvent (B) by either adding an inorganic acid to the recovered organic solvent (B) or bringing the recovered organic solvent (B) into contact with activated carbon; and third, conducting distillation again. Neither Iwasaki et al nor Miyahara et al teach or suggest such a series of steps. As noted above, the column referred to by Iwasaki et al is the distillation column, and the second washing step of Miyahara et al employing acid uses water as the solvent, not acetone, so that any acetone contained therein is merely a result of adhesion to PAS from the first washing step. Accordingly, neither of the processes taught by these references results in or suggests the series of steps required in the purification steps of claims 1 and 19, or the purifications resulting in recycled solvent containing at most 3000 ppm methylamine as required by claims 1, 15 and 18.

In determining patentability under 35 U.S.C. §103, it is necessary to determine whether there was an apparent reason to combine the known elements of the prior art in the fashion of the claims at issue, *KSR International Co. v. Teleflex, Inc.*, supra. Here, neither Miyahara et al, Iwasaki et al, nor *Water Encyclopedia* provide an apparent reason to add an inorganic acid to a distilled organic solvent or to contact a distilled organic solvent with activated carbon, followed by additional distillation, particularly since none of these references recognize that methylamine content in the washing organic solvent accumulates as the solvent is recycled and is not removed

by simple distillation. Accordingly, the combination of Miyahara et al, Iwasaki et al and *Water Encyclopedia* does not render the present claims obvious. Accordingly, the rejection under 35 U.S.C. §103 has been overcome. Reconsideration is respectfully requested.

It is believed that the above represents a complete response to the Official Action and places the present application in condition for allowance. Reconsideration and an early allowance are requested.

Please charge any fees required in connection with the present communication, or credit any overpayment, to Deposit Account No. 503915.

Respectfully submitted,

/Holly D. Kozlowski/

Holly D. Kozlowski, Reg. No. 30,468
Porter, Wright, Morris & Arthur LLP
250 East Fifth Street, Suite 2200
Cincinnati, Ohio 45202
(513) 369-4224